


1. (Twice Amended) A method of substantially achieving a minimum stopping distance of a freight train consist without incurring any significant detrimental wheel slide, said method comprising the steps of:

(a) preprogramming preselected information into a computer disposed on a freight locomotive including velocity dependence of wheel to rail adhesion;

(b) determining a speed of such freight train consist;

(c) communicating a signal that is indicative of said speed determined in step (b) to such computer disposed on such freight locomotive;

 (d) determining in such computer a pressure that can be applied to brake cylinders which will maintain substantially maximum adhesion between wheels being braked and rail surfaces in contact with such wheels such that braking energy is substantially evenly distributed to all of such wheels;

(e) communicating a signal representative of such pressure determined in step (d) to a pressure control valve in fluid communication with such brake cylinders; and

(f) using said velocity dependence of wheel to rail adhesion in maintaining a maximum pressure on such brake cylinders that will stop such train consist in a shortest possible distance while simultaneously substantially preventing wheel slide along said rails, minimizing variation in wheel temperatures, and

E1 substantially evenly distributing braking energy to all of such wheels.

11. (Twice Amended) An apparatus for substantially achieving a minimum stopping distance of a freight train consist without incurring any significant detrimental wheel slide, said apparatus comprising:

(a) a program having preselected information including velocity dependence of wheel to rail adhesion disposed in a computer disposed on a freight locomotive;

E2 (b) a speed sensing means disposed on at least one of such locomotive and a freight car for determining a speed of such freight train consist;

(c) a means connected to said speed sensing means for communicating a signal that is indicative of said speed to such computer disposed on such freight locomotive, so that such program can determine a pressure that can be applied to brake cylinders which will maintain substantially maximum adhesion between wheels being braked and rail surfaces in contact with such wheels and substantially evenly distributing braking energy to all of such wheels; and

(d) a means connected to such computer for communicating a signal representative of such pressure determined by said program to a pressure control valve disposed in fluid communication with

such brake cylinders and maintaining a maximum pressure on such
brake cylinders that will stop such train consist in a shortest
possible distance while simultaneously substantially preventing
wheel slide along said rails, minimizing variation in wheel
temperatures, and substantially evenly distributing braking energy
to all of such wheels.
